Patent Claims

1. A method for data transmission in a mobile radio system, in which

- first data (d) are transmitted by a first base station (BS1) to a mobile station (MS) using a first transmission method,
- the transmission of the first data (d) is interrupted at specific times by interruption phases (2) in which the mobile station (MS) interrupts the reception of first data and/or the processing of received first data (d), and in which the mobile station (MS) is switched to reception of characteristic data packets (dp) which are transmitted by a second base station (BS2) using a second transmission method,

characterized in that

- during interruption phases (2), in which the mobile station (MS) interrupts the reception of first data and/or the processing of received first data (d), and in which the mobile station (MS) is switched to reception of characteristic data packets (dp) which are transmitted by a second base station (BS2) using a second transmission method, the mobile station (MS) is also switched to reception of data packets (dp) which are to be detected and are transmitted by a second base station (BS2) using a second transmission method.

2. The method as claimed in one of the preceding claims, in which knowledge about the frame structure of the data packets transmitted by a second base station (BS2) is used in order to reduce the maximum effective total duration of the interruption phases.

3. The method as claimed in one of the preceding claims, in which, if the transmission conditions are good, a shorter maximum effective total duration of the interruption phases is

used for secure detection of a data packet which is to be detected than would be necessary in the situation where the mobile station (MS) is switched only to receive characteristic data packets.

4. The method as claimed in one of the preceding claims, in which knowledge about the relative position of the characteristic data packets transmitted by a second base station (BS2) and of data packets which are to be detected is used in order to reduce the maximum effective total duration of the interruption phases.

5. The method as claimed in one of the preceding claims, in which, after receiving a characteristic data packet and/or receiving a data packet which is to be detected, information (m) which influences the insertion of interruption phases is transmitted by the mobile station (MS) to the first base station (BS1).

6. The method as claimed in claim 5, in which, after receiving a data packet which is to be detected, information (m) which results in no more interruption phases being inserted is transmitted by the mobile station (MS) to the first base station (BS1).

7. The method as claimed in claim 5, in which, after receiving a characteristic data packet, information (m) is transmitted by the mobile station (MS) to the first base station (BS1), which results in another interruption phase for receiving the data packet which is to be detected being inserted after a predetermined time interval between characteristic data packets and data packets which are to be detected.

8. The method as claimed in one of the preceding claims, in which after receiving a characteristic data packet and/or a data packet which is to be detected from a second base station (BS2), the mobile station (MS) is switched to receive a characteristic data packet and/or a data packet

which is to be detected from one or more third base stations (BS3), and

- after receiving a characteristic data packet and/or a data packet which is to be detected from no, one or a number of third base stations, information (m) is transmitted by the mobile station (MS) to the first base station (BS1) in order to influence the insertion of the interruption phases and/or in order to transmit information via second and/or third base stations.

9. The method as claimed in one of the preceding claims, in which
the information transmitted by means of data packets by the mobile station (MS) and received by a second base station (BS2) in a predetermined time period is stored and/or evaluated in a memory (SPE).

10. The method as claimed in one of the preceding claims, in which
information for influencing the insertion of the interruption phases and information about second and/or third base stations are transmitted by means of the same message.

11. The method as claimed in one of the preceding claims, in which
the second and/or third base stations are base stations in a GSM mobile radio system or in a system derived from such a system, the data packets which are to be detected are synchronization data packets, and the characteristic data packets are frequency correction data packets.

12. A mobile station (MS) having

- means (EE) for receiving first data which are transmitted by a first base station (BS1) using a first transmission method,

- means (EE) for receiving data packets (dp) which are transmitted by a second base station (BS2) using a second transmission method,
- means (STE) for inserting pauses at least during specific reception phases in which the reception of first data and/or the processing of received first data is interrupted, and
- means (STE) for switching to reception of characteristic data packets and data packets which are to be detected and are transmitted by a second base station (BS2), during the specific reception phases in which the reception of first data and/or the processing of received first data is interrupted.

13. The mobile station (MS) as claimed in claim 12, having

- means (STE) for switching to reception of data packets which are characteristic, are to be detected and are transmitted by a third base station (BS3).

14. The mobile station (MS) as claimed in one of claims 12 or 13, having

- means (VE) for evaluating information which is contained in the characteristic data packets and/or data packets which are to be detected, and
- means (SE) for transmitting information to the first base station (BS1), which influences the insertion of interruption phases as a function of information which is contained in the characteristic data packets and/or in the data packets which are to be detected.

15. The mobile station (MS) as claimed in one of claims 12 to 14, having

- means (VE) for evaluating information which is contained in the characteristic data packets and/or in the data packets which are to be detected, and
- means (STE) for switching off specific elements in the mobile station (MS) in the interruption phases

once sufficient information has been determined about second and/or, possibly, third base stations.

16. The mobile station (MS) as claimed in one of claims 12 to 15, having means (SE) for transmitting information to the first base station which results in no more interruption phases being inserted.

17. The mobile station (MS) as claimed in one of claims 12 to 16, having means (SE) for transmitting information to the first base station which results in no more interruption phases being inserted after receiving a subsequent data packet which is to be detected.

18. The mobile station (MS) as claimed in one of claims 12 to 17, having

- means (SE) for transmitting information to the first base station which results in another interruption phase for receiving the data packet which is to be detected being inserted after a predetermined time interval which is between characteristic data packets and data packets which are to be detected.

19. The mobile station (MS) as claimed in one of claims 12 to 18, having

- means (STE) for switching to reception of a characteristic data packet and/or of a data packet which is to be detected from one or more third base stations after receiving a characteristic data packet and/or a data packet which is to be detected from a second base station, and
- means (SE) for transmitting information to the first base station in order to influence the insertion of the interruption phases and/or in order to transmit information about second and/or third base stations after receiving a

characteristic data packet and/or a data packet which is to be detected from no, one or a number of third base stations.

20. The mobile station (MS) as claimed in one of claims 12 to 19, having
means (SPE, VE) for storing and/or evaluating data packets which are received by a second base station in a predetermined time period.

21. A base station (BS1) having
- means (SE) for transmitting first data (d) to a mobile station (MS) using a first transmission method,
- means for inserting interruption phases at least during specific transmission phases (2) in which the mobile station (MS) interrupts the reception of first data (d) and/or the processing of received first data (d), and in which the mobile station (MS) is switched to reception of characteristic data packets (dp) and of data packets (dp) which are to be detected and are transmitted by a second base station (BS2),
- and the effective total duration, which is required for secure detection in good transmission conditions, of the interruption phases is shorter than the effective total duration, which is required for secure detection in good transmission conditions, of the interruption phases in the situation where the mobile station is switched only to reception of characteristic data packets (dp) or only to reception of data packets (dp) which are to be detected.

22. The base station (BS1) as claimed in claim 21, having
means for using the knowledge about the frame structure of the data packets transmitted by a second base station (BS2) in order to reduce the effective total duration of the interruption phases.

23. The base station (BS1) as claimed in one of claims 21 or 22, having
means for using the knowledge about the relative position of the characteristic data packets and of the data packets which are to be detected, transmitted by a second base station (BS2) are used in order to reduce the maximum effective total duration of the interruption phases.

24. The base station (BS1) as claimed in one of claims 21 to 23, having
- means for receiving information which influences the insertion of interruption phases, and
- means for influencing the insertion of interruption phases as a function of the information which influences the insertion of interruption phases.

25. The base station (BS1) as claimed in one of claims 21 to 24, having
- means for transmitting data from and to a mobile station (MS),
- means for inserting interruption phases at least during specific transmission phases (2),
- means for receiving information which influences the insertion of interruption phases,
- means for influencing the insertion of interruption phases as a function of a reception result at the mobile station.

26. The base station (BS1) as claimed in one of claims 21 to 25, having
means for receiving and processing information which results in no more interruption phases being inserted.

27. The base station (BS1) as claimed in one of claims 21 to 26, having

means for receiving and processing information which results in no more interruption phases being inserted after receiving a subsequent data packet which is to be detected.

28. The base station (BS1) as claimed in one of claims 21 to 27, having

means for receiving and processing information which results in another interruption phase for receiving the data packet which is to be detected being inserted after a predetermined time interval between characteristic data packets and data packets which are to be detected.

29. The base station (BS1) as claimed in one of claims 21 to 28, having

means for receiving and processing information for influencing the insertion of the interruption phases and/or information about second and/or third base stations.